National Stroke Project – TIA/Ischemic Stroke
Analytic Flow Chart

12/5/2000
Data analysis is completed on 750 randomly selected fee-for-service acute Medicare beneficiary (all ages) inpatient medical records with a principal diagnosis of any of the following ICD-9-CM codes:
362.34, 433.xx, 434.xx, 435.0, 435.1, 435.3, 435.8, 435.9 and 436

Denominator (D) inclusions

> Randomly selected acute Medicare beneficiary (all ages) inpatient medical records with a principal diagnosis of any of the following ICD-9-CM codes: 362.34, 433.xx, 434.xx, 435.0, 435.1, 435.3, 435.8, 435.9 or 436

AND

Numerator (N) inclusions:

> Discharge timeframe: April 1998 – March 1999

$$\frac{\text{\# STROKE/TIA CASES INCLUDED IN ANALYSIS}}{\text{\# STROKE/TIA CASES SUBMITTED}} = \frac{N}{D} \, \underline{\qquad} \times 100 = \underline{\quad}\%$$

CASES MUST PASS THESE REQUIREMENTS TO BE CONSIDERED FOR THE REMAINING PERFORMANCE MEASURES AND TEST MEASURES. FURTHER EXCLUSIONS MAY APPLY.

National Stroke Project – TIA/Ischemic Stroke
Analytic Flow Chart

Quality Indicator #1 – Antithrombotic prescribed at discharge

Denominator (D) inclusions:

Principal diagnosis of any of the following ICD-9-CM codes: 362.34, 433.xx, 434.xx, 435.0, 435.1, 435.3, 435.8, 435.9 or 436
and
Discharged alive

AND

Denominator (D) exclusions:

Discharged against medical advice
or
Transferred to another acute care facility
or
Patient refusal of all antithrombotics
or
One or more contraindication to Aggrenox, aspirin, clopidogrel/Plavix, dipyridamole/Persantine, ticlopidine/Ticlid, warfarin/Coumadin (See page 3 for a detailed definition of this derived variable.)

AND

Numerator (N) inclusions:

Aggrenox, aspirin, ticlopidine, clopidogrel, dipyridamole or warfarin prescribed at discharge
or
Physician plan for Aggrenox, aspirin, ticlopidine, clopidogrel, dipyridamole or warfarin after discharge

CASES IN THE (D) DISCHARGED ON ANTITHROMBOTIC
<u>OR WITH PHYSICIAN PLAN FOR ANTITHROMBOTIC AFTER DISCHARGE</u> $= \frac{N}{D}$ = ____ X 100 = ___ %
CASES THAT MEET (D) INCLUSION CRITERIA AND HAVE NO EXCLUSIONS

Derived variables for Quality Indicator #1

Possible Contraindications to Antithrombotics

Bleeding disorder
or
Physician documentation of risk for bleeding
or
Peptic ulcer (current)
or
Terminal/comfort care on day of arrival or during stay
or
CVA, hemorrhagic (history or current)
or
CT scan shows new hemorrhagic CVA
or
MRI scan shows new hemorrhagic CVA
or
Brain/CNS cancer (history or current)
or
Extensive/metastatic cancer (history or current)
or
Terminal illness (life expectancy < 6 months)
or
Hemorrhage, any type (history or current)
or
Intracranial surgery/biopsy (current)
or
Planned surgery within 7 days following discharge
or
Physician documentation antithrombotic considered but not prescribed (See page 4 for a detailed definition of this derived variable.)
or
Unrepaired intracranial aneurysm (history or current)
or
Aortic dissection (current)
or
History or current finding of allergy, sensitivity, adverse reaction or complication to Aggrenox, aspirin, clopidogrel/Plavix, dipyridamole/Persantine, ticlopidine/Ticlid and warfarin/Coumadin (See page 4 for a detailed definition of this derived variable.)

Derived variables for Quality Indicator #1 (continued)

Antithrombotics Considered but not Prescribed

Physician documentation that at least one of the following antithrombotics was considered but not prescribed: Aggrenox, aspirin, dipyridamole, clopidogrel, ticlopidine or a specific antithrombotic was not specified

History of Allergy, Sensitivity or Adverse Reaction

History of allergy, sensitivity, adverse reaction or complication to Aggrenox, aspirin, clopidogrel/Plavix, dipyridamole/Persantine, ticlopidine/Ticlid and warfarin/Coumadin
or
Current allergy, sensitivity, adverse reaction or complication to Aggrenox, aspirin, clopidogrel/Plavix, dipyridamole/Persantine, ticlopidine/Ticlid and warfarin/Coumadin

Quality Indicator #2 – Avoidance of sublingual nifedipine in patients with acute stroke

Denominator (D) inclusions:

Confirmed diagnosis of acute stroke (See page 6 for detailed definitions of these derived
variables.)
and
(Blood pressure within the first 24 hours > 180 mmHg systolic
or
Blood pressure within the first 24 hours > 100 mmHg diastolic
or
Sublingual nifedipine was administered within first 24 hours following arrival
or
Sublingual nifedipine was ordered within 24 hours following arrival)

AND

Denominator (D) exclusions:

None

AND

Numerator (N) inclusions:

Sublingual nifedipine not administered within the first 24 hours following the time of arrival
and
Sublingual nifedipine not ordered within the first 24 hours following the time of arrival

CASES IN THE (D) NOT GIVEN SUBLINGUAL NIFEDIPINE
AND WITHOUT AN ORDER FOR SUBLINGUAL NIFEDIPINE   = N = _____ X 100 = ___ %
ACUTE STROKE CASES THAT MEET (D) INCLUSION CRITERIA   D

Derived variable for Quality Indicator #2 and Test Quality Indicators #1, #2, #3, #4 and #6

Confirmed Diagnosis of Stroke

(Visual deficit and Symptoms > 1 hour **and** present on arrival) or (Speech deficit and Symptoms > 1 hour **and** present on arrival) or (Motor deficit and Symptoms >1 hour **and** present on arrival) or (Sensory deficit and Symptoms > 1 hour **and** present on arrival)

Derived variables for Quality Indicator #2 and Test Quality Indicators #2, #3, and #4

Definition of Acute

Patients with physician documentation of earliest symptom onset ≤ 48 hours prior to arrival or (Patients without physician documentation of time of earliest symptom onset and Symptom onset ≤ 2 days prior to arrival) (See below and page 7 for detailed definitions of these derived variables.)

Date and Time of Arrival Reformatted

Reformat date and time of arrival into one variable expressing date and time in format ddmmmyy:hh:mm

Derived variables for Quality Indicator #2 (continued)

Calculate and reformat symptom onset dates/times and find the earliest of all symptoms present.
Date and Time of EARLIEST Symptom Onset Reformatted

1. Reformat all symptom onset dates and times into one variable for each symptom expressing date and time in format ddmmmyy:hh:mm

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2. Reformat arrival date and time into one variable in format ddmmmyy:hh:mm

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3. If Visual deficit onset date or time are missing or UTD, use symptom onset interval and arrival date and time to calculate:

[If interval = 1 (less than or equal to one hour), subtract one hour from arrival,
else
if interval = 2 (greater than one hour and less than or equal to two hours), subtract two hours from arrival,
else
if interval = 3 (greater than two hours and less than or equal to three hours), subtract three hours from arrival,
else
if interval = 4 (greater than three hours and less than or equal to 24 hours), subtract 24 hours from arrival,
if interval = 5 (greater than 24 hours and less than or equal to 48 hours), subtract 48 hours from arrival,
if interval = 6 (greater than 48 hours and less than or equal to seven days), subtract 7 days from arrival,
else
if interval = 7 (physician unable to determine) or 8 (no physician documentation), go to deficit onset date

Repeat this process with all four neurologic deficit categories.

Of the four neurologic deficit categories, use the EARLIEST symptom onset (reformatted)

Test Quality Indicator #1 – Documentation of time of symptom onset (or interval)

Denominator (D) inclusions:

Confirmed diagnosis of stroke (See page 6 for a detailed definition of this derived variable.)

AND

Denominator (D) exclusions:

None

AND

Numerator (N) inclusions:

Physician documentation of symptom onset interval or Physician documentation of specific time of symptom onset (i.e., HH:MM)

$$\frac{\text{\# CASES IN THE (D) WITH DEFICIT ONSET TIME DOCUMENTED}}{\text{\# STROKE CASES THAT MEET (D) INCLUSION CRITERIA}} = \frac{N}{D} = \underline{\quad} \times 100 = \underline{\quad} \%$$

Test Quality Indicator #2 – Head CT/MRI during hospitalization

Denominator (D) inclusions:

Confirmed diagnosis of acute stroke (See page 6 for detailed definitions of these derived variables.)
and
Did not arrive from another acute care facility

AND

Denominator (D) exclusions:

Terminal/comfort care on day of arrival

AND

Numerator (N) inclusions:

Head CT/MRI within one day prior to arrival or during hospitalization

$$\frac{\text{\# CASES IN THE (D) WITH HEAD CT/MRI}}{\substack{\text{\# ACUTE STROKE CASES THAT MEET (D) INCLUSION}\\ \text{CRITERIA AND HAVE NO EXCLUSIONS}}} = \frac{N}{D} = \underline{\quad} \times 100 = \underline{\quad} \%$$

Test Quality Indicator #3 – Time to initial head CT/MRI

Denominator inclusions:

See numerator data set for Test Quality Indicator #2
and
(Date and time of CT documented
or
Date and time of MRI documented) (See page 11 for detailed definitions of these derived
variables.)
and
Date and time of arrival documented (See page 6 for a detailed definition of this derived
variable.)

AND

Denominator exclusions:

None

The median time (in minutes) from arrival to initial CT or MRI is based on the earliest time of
the CT or MRI as defined in the Minimum Time to CT or MRI Scan derived variable on page 11.

Note: If CT or MRI time is prior to arrival, then Time to CT = 0 or Time to MRI = 0.

Derived variables for Test Quality Indicator #3

Reformat dates and times to simplify further calculations
Date and Time of CT Scan Reformatted

If HNSCTTM is not blank, then reformat date and time of CT scan into one variable expressing date and time in format ddmmmyy:hh:mm – example: 01JAN98:15:04, meaning 3:04pm on January 1, 1998

Date and Time of MRI Scan Reformatted

If HNSMRITM is not blank, then reformat date and time of MRI scan into one variable expressing date and time in format ddmmmyy:hh:mm – example: 01JAN98:15:04, meaning 3:04pm on January 1, 1998

Miniumum Time to CT or MRI

The earliest time of the initial CT or MRI

Time to CT

The difference between the time of the initial CT and the time of arrival

Time to MRI

The difference between the time of the initial MRI and the time of arrival

Test Quality Indicator #4 – Time to thrombolytic administration

Denominator inclusions:

Confirmed diagnosis of acute stroke (See page 6 for detailed definitions of these derived variables.)
and
Date and time of arrival documented (See page 6 for a detailed definition of this derived variable.)
and
Date and time of earliest thrombolytic administration documented (See below for a detailed definition of this derived variable.)
and
Thrombolytic administered during this hospitalization on the day of arrival or the first day following arrival (See below for a detailed definition of this derived variable.)

AND

Denominator exclusions:

None

The median time (in minutes) from arrival to thrombolytic administration is based on Date and Time of Initial Thrombolytic Administration minus the Date and Time of Arrival for each record.

Derived variable for Test Quality Indicator #4
Date and Time of Initial Thrombolytic Administration Reformatted

Thrombolytic on the day of arrival or the first day following arrival
and
Date and time of initial dosage of thrombolytic administered for this record (See below for detailed definitions of these derived variables.)

Date of Initial Thrombolytic

Thrombolytic date minus the arrival date

Time to Initial Thrombolytic

Time to initial thrombolytic equals the time of initial thrombolytic administration minus the time of arrival measured in minutes

Test Quality Indicator #5 – Thrombolytic patients meeting recommended dosing, timing, imaging and blood pressure parameters

> *NOTE: The analysis for this indicator is under development and will be updated when available.*

> **5a. Acute stroke patients with adequate information documented regarding dosing, timing, imaging and blood pressure**

CASES IN THE (D) WITH DOSING, TIMING,
IMAGING AND PRE-THROMBOLYTIC BP DOCUMENTED   = $\underline{N}$ = ____ X 100 = ____%
ACUTE STROKE CASES THAT MEET (D) INCLUSION CRITERIA   D

> **#5b. Acute stroke patients receiving thrombolysis for stroke that have dosing, timing, imaging and blood pressure information documented, receive an FDA approved drug and meet recommended dosing, timing, imaging and blood pressure parameters for thrombolytic administration**

CASES IN THE (D) THAT MEET DOSING, TIMING,
IMAGING AND PRE-THROMBOLYTIC BP GUIDELINES   = $\underline{N}$ = ____ X 100 = ____ %
ACUTE STROKE CASES THAT MEET (D) INCLUSION CRITERIA   D

> **#5c. All acute stroke patients receiving thrombolysis for stroke, that receive an FDA approved drug and meet recommended dosing, timing, imaging and blood pressure parameters**

CASES IN THE (D) THAT MEET DOSING, TIMING,
IMAGING AND PRE-THROMBOLYTIC BP GUIDELINES   = $\underline{N}$ = ____ X 100 = ____ %
ACUTE STROKE CASES THAT MEET (D) INCLUSION CRITERIA   D

Test Quality Indicator #6 – Deep vein thrombosis prophylaxis (DVT) initiated by second hospital day

Denominator (D) inclusions:

Confirmed diagnosis of stroke (See page 7 for a detailed definition of this derived variable.)
and
Nonambulatory on second hospital day

AND

Denominator (D) exclusions:

Terminal/comfort care on the day of arrival or any time during the hospitalization

AND

Numerator (N) inclusions:

DVT prophylaxis* initiated by second hospital day

*Included in DVT prophylaxis: intermittent pneumatic compression (IPC) devices, anticoagulation with warfarin or heparin (low-dose unfractionated, low molecular weight or full-dose)

CASES IN THE (D) WITH DVT PROPHYLAXIS
<u>INITIATED BY THE CLOSE OF THE SECOND HOSPITAL DAY</u>   = $\underline{N}$ = ____ X 100 = ____ %
STROKE CASES THAT MEET (D) INCLUSION CRITERIA   D
AND HAVE NO EXCLUSIONS